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ABSTRACT

In bilingual education programs, instruction may be (1) "less-than-half," in which instruction is mostly in English except for such subjects as social studies and native language arts; (2) "half-and-half," in which instruction is half in the student's language, half in English; or (3) "more-than-half," which provides instruction entirely in the student's language, with the exception of one English period daily, for the first three to five years. The first curriculum is the least ambitious; the second, based on assumptions described by Skinner and by Macnamara concerning problems of interference and conceptual development, adopts the approach that the concepts developed in one language will more likely be transferred into the second language if the transfer is done as soon as possible--within the same day, if possible. This approach is considered "feasible and promising" because the problem of transfer, or changing language, is believed to be almost as simple as changing clothes. The author discusses "thinking" in a language and defines it as having a direct rule-organized system between thought and a particular language--in contradistinction to having two indirect and distinct rule-governed systems between thought and another language (e.g., one's native language) and another between the native language and the language of instruction. (AMM)

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Curricular implications of the relationships between language and thought.

Robert D. Wilson

TESOL Convention 1970

The problems to which this paper is addressed is the uses to which the linguistic mediums of instruction will be put. It is not a question of whether the children's native language will be included in his curriculum. It will. And such a curriculum goes by the name of bilingual. The question is how the children's native language is to be apportioned in the curriculum. Bruce Gaarder in a 1963 paper described two basic plans for bilingual schools. One plan calls for instruction of all subjects in the students' native language during half of the school day, then reteaching all the subjects in English during the other half of the school day. Let's call this the half-and-half plan. Gaarder's other plan apportions the students' native language to such subjects as Social Studies and native-lg. arts, while English is used for the rest of the curriculum, which includes areas like Science and Mathematics. Let's call this the less-than-half plan.

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A third plan has since emerged, for example, in many of the projects supported by Title VII known as The Bilingual Act. This plan calls for

most of the curriculum in the first three or even five years to be entirely in the pupils' native language except for one period daily of ESL. Let's call this the more-than-half plan.

Observe that we are discussing curriculum, not TESL programs. TESL programs have generally confined themselves to the teaching of communication. Curriculum, on the other hand, makes one of its major objectives the development of thinking. It is this disparity between the objective of TESL and the objective of curriculum that has made TESL a four-letter word among many educators. For those pupils who will remain in the U.S. and become students in high school, scholars in college, and professionals in graduate school, the learning of English cannot be one of mere communication. They must learn to think in English, and in particular, think in English in those curriculum areas that later will be taught and learned in English.

Of course, one could develop TESL programs that would make thinking in English an objective on a par with communication. Or developers of bilingual curricula could build on the communication provided by TESL a program of thinking in English in the other curriculum areas. To do either of these requires a set of assumptions about the relationships holding between thought and language.

Before discussing these relationships, we will need an operational definition of thinking in a language. To think in a language means to have a direct rule-governed system between thought and a particular language- in contradistinction to having two indirect and distinct rule-governed systems between thoughtand another language, say one's native language, and another between the native language and the language of instruction. This inability to think directly in English is the handicap of many of the foreign students in our universities. They communicate well enough in English to pass the overseas TOEFL (?) test, read English text books and listen to a lecture, but they are unable to understand as well and as much as those who think directly in English. It should be noted that this definition does not explain the fact that there are varying degrees in the ability to think in English even among native speakers. In other words, fluency in a language does not necessarily mean a high degree of thinking.

What follows is a system of definitions which implies the beginnings of a synthesized theory of the relationship between thought and language. I will distinguish morpheme and sentence from meaning, meaning from sense, and sense from thought, and I make the basic assumption that all these

notions - from morpheme to thought - are innate in the human species.

Morphemes belong to syntactic classes and have phonemic or graphemic shapes while meaning is the morpheme's dictionary interpretation. A morpheme may have several dictionary interpretations. Put a morpheme in a sentence and you generally get the meaning of the morpheme cut down to one of the dictionary interpretations. On the other hand, put several morphemes together to make a sentence and you get more meaning than the sum of the morphemes in a list. You get extra meaning from the syntactic functions of the sentence, functions like predication, modification, and coordination. The extra meaning is not merely slipped on to the morphemes in the sentence, but together with the morphemes a whole and composite meaning of the sentence emerges. To the linguist, meaning of morpheme and sentence is the product of the semantic component of the language.

A further distinction must be made: that between meaning and sense. Sense is meaning reinterpreted in terms of a particular context. A sentence like "Don't do it" has a relatively constant meaning but changes its sense when one woman says it as a mother while another woman says it as a woman. A morpheme, too, may have changeable sense as well as constant

meaning. Take the unique meaning of a proper name, make it the name of a politician, and observe how even a proper name changes sense in a comedian's monologue, as compared say with the sense of the same name in an autobiography. In this view the sense of a morpheme may add a new meaning, that literally changing the morpheme not only in its composition but also in its relationships with other morphemes. In other words, the structure of the dictionary of a speaker may change under the influence of sense.

One last distinction: that between sense and thought. It is thought that makes the connection between meaning and context to produce sense, or, more accurately, to select some sort of sense among several. For an example of the possibility of several senses, take some lines in a play and quite often actor, director and critic will differ in their interpretations of those lines.

Observe, too, that meaning itself could be regarded as part of the general context, that it is actually context that thought tries to make sense of. You hear a knock on your door, you open it to see a smiling young man with a handful of new brushes in his hand, so you figure that he's a brush salesman. That is the sense you make of the situation.

Thought connects two or more bits of information to produce sense. Put differently, thought solves a problem (and not necessarily correctly). An example from mathematics in a classroom should summarize the different terms I have just introduced here. The pupil is provided with the form and meaning of two bits of information: three and four. Then he is asked to apply the thought process of addition. As a result, he might select seven as the sense of three and four or he might select five and two or six and one or even nine minus two. Consider now the situation where the task of adding three and four is one of several such in a workbook where the expected response is a single whole number. The pupil then must connect the task of adding three and four with the task of providing a single whole number. Applying the thought process of analogy, he selects seven and the sense of three and four.

It is important to note that thought is viewed here as a process and from now on I will call it thinking. Thinking would generate sense in the manner I have described, and when sense remains even after the context that produced it is gone, as in the sense of the abstract statements of a science, then that sense becomes a thought. It is not necessarily permanent, being

changeable, but as the product of thinking it is not a process, it is not thinking.

I will proceed now to sketch a class of learning problems that the preceding notions, being innate in the human species, equips the students to cope with their class of problems.

The general problem is that of learning, of course, learning vocabulary in particular, and not just everyday vocabulary as found in TESL programs but also the technical vocabulary of disciplines like arithmetic and geometry. The pupil must make a connection between the phonemic shape of a morpheme and a syntactic function in order to determine its syntactic class, and he must make a connection between the phonemic shape of that morpheme and a syntactic function in order to determine its syntactic class, and he must make a connection between the phonemic shape of that morpheme and its context in order to determine a sense that will match the meaning intended by the teacher. Once the pupil determines the syntactic class and the sense of the phonemic shape in question, he has acquired a morpheme, in other words, a dictionary entry in his grammar of the language.

Observe that the meaning of this new morpheme in the child's vocabulary is just one meaning of a morpheme that might possibly have other meanings in the language. For example, he might have just learned only that the phoneme shape chair has the meaning "something to sit on," and he has yet to learn the meaning "academic position in a university". Moreover, and more importantly for the technical vocabulary in the disciplines, he still has to learn such meanings of chair as "piece of furniture," "optionally related to table in a way that it is not related to footstool," and "similar to yet different from bench." I am referring of course to relational meaning.

As if this were not enough, meaning relationships like the ones I have described are also vocabulary-learning tasks, tasks requiring the child to learn vocabulary like same as, different from, member of, used for, etc.

Given the problem of learning vocabulary as I have just described it, how would one of the current learning theories explain this great achievement of learning vocabulary?

According to this other theory an associative bond is established between a phonemic shape and the context in which it is found by repeated simultaneous perception of the sound of the morpheme and its context,

generating meaning, the meaning being the context. The notion of an associative bond is not meant to be a mental phenomenon but simply a mechanical juxtaposition, often referred to as a probability. B. F. Skinner puts it this way (and I quote): "...the probability that the speaker will emit a response of a given form in the presence of a stimulus having specified properties under certain broad conditions of deprivation or aversive stimulation.... is the relation of reference or meaning." (end of quote) Furthermore, association of the phonemic shape of the morpheme with other contexts generates new bonds, that is, multiple meanings for the same phonemic shape. Conversely, the number of multiple meanings to a word may decrease, that is, forgotten, through the absence of repetition, of reinforcement, of the mechanical association between the sound of a morpheme and some of its contexts.

This is a theory developed by B.F. Skinner, applying the achievements in the study of animal behavior to complex human behavior. This extension of a thing of animal behavior to human behavior assumes that linguistic behavior, for example, is not specific to a species. This is a strange assumption in view of the fact that there are qualitative differences in problem-solving strategies even between rats and fish. It is not surprising then that

Skinner's generalization of his theory of animal behavior to human behavior is not widely shared even by his colleagues. However, it is surprising that Skinner has had a marked influence on general education on TESL, and now on bilingual curriculums. For a criticism of Skinner's influence on TESL, see Leon Jakobovits article in Language Learning early last year.

For designers of bilingual curricula, Skinner's view that the relationship between a phonemic shape and its referent is no more intimate than mere probability allows the curricular implication that conceptual development in the garb of phonemic shapes of one language will create minor problems when the concepts developed in one language are later garbed in the phonemic shapes of another language. Add to this the evidence marshalled by JOHN MACNAMARA that with traditional methodologies of instruction conceptual development is more easily effected in the native language of the students, and you have the two major bases for designing the more-than-half type of curriculum in which the first three or even five years the medium of instruction will be, in the main, in the student's native language.

The half-and-half type of curriculum, too, is based on these two assumptions. However, it also adopts the approach that the concepts developed in the garb of one language will more likely be transferred, that is, dressed up in the garb of the second language if this transfer is done as soon as possible, indeed, within the same day. This approach, too, is considered feasible and promising because the problem of transfer, the problem of changing languages is believed to be almost as simple as changing clothes.

The less-than-half type of curriculum is the least ambitious of the three, making use of the pupils' native language in such areas as Social Studies and Language Arts, and of English in areas like Science, Mathematics and Language Arts, that is, in those areas that will demand thinking in English in the upper grades, high school, and college. This plan is less ambitious perhaps because it is based on the realization that concepts and a language become a unit difficult to disentangle or to put it in the words of Leo Vygotsky :

> The absence of a primary bond between thought and word does not mean at all that this connection can come into existence only in an <u>external</u> way.(RDW)

..... The meaning of a word represents such a close unity of thinking and speech that it is not possible to say whether it is a phenomenon of speech or a phenomenon of thinking ..... It is a phenomenon of verbal thought or of meaningful speech; it is a unity of word and thought ..... the relation of thought to word is first of all not a thing, but a process ..... and the relation between thought and word changes ..... Thought. In that process the relation of thought to word undergoes changes ..... Thought is not merely expressed in words (RDW); it comes into existence through them.

Jakobovits, Leon. 1968. "Dimensionality of Compound-Coordinate Billingualism" in Language Learning. No. 3 August 1968 pp. 29-55

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